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(72) Inventor DONALD ROLAND ABBOTT

(54) IMPROVEMENTS IN OR RELATING TO COATING SURFACES UNDER WATER

(71) We, SEA AND LAND PIPELINES LIMITED, a British Company of 141 King Street, Great Yarmouth, Norfolk, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to providing a coating on a surface under water, particularly although no exclusively a surface of a pipe.

The invention, the scope of which is defined in the appended claims, includes a method of providing a coating on a surface under water, comprising applying a layer of coating material to one side of a carrier sheet to form a coating application unit therewith, applying the unit with the layer of coating material innermost to the surface under water, and thereafter removing the carrier sheet from the layer of coating material.

The invention also includes a method of providing a coating on a surface under water, comprising forming a plurality of coating application units by applying coating material to carrier sheet means, applying said units to the surface under water with the coating material innermost, and thereafter removing the carrier sheet means.

Advantageously, the coating material is applied to the carrier sheet means between height gauges, and levelled with respect to said gauges.

In order that the invention may be well understood, an embodiment therof, which is given by way of example only, will now be described, reference being had to the accompanying drawings, in which:

Figure 1 is a partially fragmentary perspective view illustrating the use of a device for forming coating tiles; and

Figure 2 illustrates such tiles being applied to a pipe.

The embodiment is concerned with the application of a coating of a suitable epoxy resin to the outer surface of an underwater pipe to protect it against corrosion.

A device for forming the coating application units or tiles as shown in Figure 1 comprises a support board 1 and sone battens 2, 3 formed into a lattice arrangement to act as a mould for the tiles 4. The battens designated 2 are fixed to the board 1 and the battens designated 3 are removably mounted thereon.

Sheets of a flexible plastics material are provided on the board between the fixed battens 3 as carriers for the tiles as indicated by the numeral 5 in Figure 1. The sheet material is, for example, a nylon, p.v.c., a neoprene or a butyl.

The epoxy is applied on top of the carrier sheet material between the battens 2, 3 which act as a height gauge for the tiles. A roller (not shown) somewhat akin to a domestic rolling pin may be rolled across the battens to level the epoxy with respect to the battens and form tiles of a uniform thickness.

The board is then lowered to a diver who removes the battens 2 and strips the tiles 4 together with their carrier sheets from the board and applies them to a pre-shot blasted section of the outside surface of a pipe 6 to be coated.

The tiles 4 may be applied to the pipe surface in staggered relationship as illustrated in Figure 2, and temporary support means, such as a magnetic metal band 7, may be used to ensure that the tiles maintain their required positions while they are curing.

After the epoxy resin of the tiles are cured, the carrier sheets are removed. It has been found that the use of a suitable plastics material for the carrier sheets results in negligible adhesion between the epoxy resin of the tiles and the sheets after the resin has cured. After the removal of the sheets the completed coating can be inspected. Of course it is to be understood that the joins between adjacent tiles may be filled with a coating material.

The above-described embodiment is particularly applicable to coating oil or gas riser pipes of offshore rig installations.

In the embodiment the tiles are square in configuration and are typically 12 inches in width and length. However it is to be understood that they may be of any suitable shape, preferably polygonal, and of any suitable size which can be easily handled.

It is to be understood that the tiles can be used as patches to repair existing coatings, and that in certain circumstances a single tile of appropriate size and shape will be all that is required to make such a repair.

WHAT WE CLAIM IS:—

1. A method of providing a coating on a surface under water, comprising applying a layer of coating material to one side of a carrier sheet to form a coating application unit therewith, applying the unit with the layer of coating material innermost to the surface under water, and thereafter removing the carrier sheet from the layer of coating material.

2. A method of providing a coating on a surface under water, comprising forming a plurality of coating application units by applying coating material to carrier sheet means, applying said units to the surface under water with the coating material innermost, and thereafter removing the carrier sheet means.

3. A method as claimed in claim 2, wherein the coating material is applied to the carrier sheet means between height gauges and levelled with respect to said gauges.

4. A method as claimed in claim 3, wherein a roller is rolled across the gauges to level the coating material.

5. A method as claimed in claim 2, 3 or 4 wherein the units are applied to the surface in staggered relationship.

6. A method as claimed in any one of the preceding claims including temporarily securing the unit or units to the surface until the coating material is bonded thereto.

7. A method as claimed in any one of the preceding claims, wherein the coating material comprises an epoxy resin and the carrier sheet or sheet means comprises a flexible plastics sheet material.

8. A method as claimed in any one of the preceding claims when used for providing a coating on an outside surface of a pipe under water.

9. A method of providing a coating on a surface under water substantially as herein described with reference to the accompanying drawings.

A. A. THORNTON & CO.,
Chartered Patent Agents,
Northumberland House,
303/306 High Holborn,
London WC1V 7LE.

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1588458 COMPLETE SPECIFICATION

1 SHEET *This drawing is a reproduction of the Original on a reduced scale*

FIG.1.

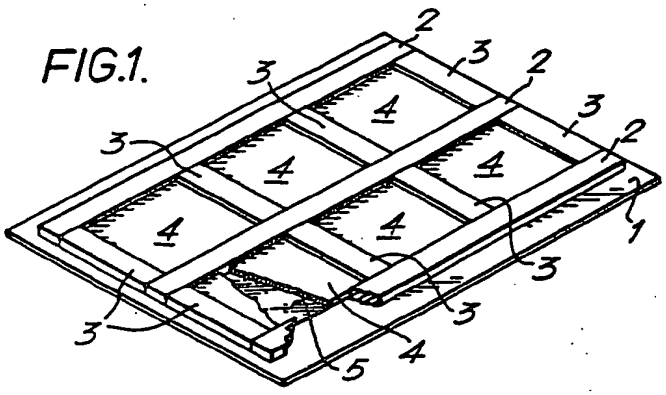

FIG.2.